[0083] In some embodiments, participants **302** can also include notaries **305**. Notaries **305** can certify that the results of an election once all of the ballots have been cast. In some embodiments, the notaries **305** can certify the results of individual ballots through the use of the ePM® system **132**. Once all of the ballots have been certified, Notaries **305** can then certify the results of the entire election.

[0084] FIG. **4** is a software hierarchy diagram of the various software modules that can be used by the blockchain access layer **101**. Access layer modules **401** comprises numerous software modules that are used by blockchain access layer **101** to perform various functions, as described below. In some embodiments, the software modules can take the form of Ethereum contracts in an Ethereum network. In some embodiments, one of the access layer modules **401** is a voter registration software module **402**. Voter registration software module **402** can perform various functions such as registering a voter **303** to vote in the system (e.g. registering a voter as receiving a ballot) and verifying a voter's identity. In some embodiments, the voter registration software module **402** can use identity services **130** and the identity management services database **151** in databases **150**. In some embodiments, voter registration software module **402** can also query for the voter's address and query for the voter's ballot.

[0085] In some embodiments, access layer modules **401** can also comprise an election software module **403**. Election software module **403** can be used to register an election with the system. In some embodiments, for example, election software module **403** can register elections that are happening in the state/county. In some embodiments, this includes what positions are up for election and who the candidates are for each position. In some embodiments, election software module **403** can also be used to query for previously registered elections.

[0086] In some embodiments, one of the access layer modules **401** is a ballot template software module **404**. In some embodiments, ballot template software module **304** can be used to create ballot templates **203**. In some embodiments, the created ballot templates **203** can be stored in the state/county election database **144** or in the ballot database **152**. Ballot templates **203** are generic ballots that elaborate the details of an election. The ballot template can be a state/county specific template showing the various categories and sub-categories of the open positions and the candidates (including their affiliation) who are running for those positions, and any "ballot measures" seeking citizen referendum. In some embodiments, ballot template software module **404** can also query for and get a ballot template **203** from either ballot **152** or state/county election database **144**, record the address for all of the candidates on the ballot, and then query for and get the various candidate addresses from state/county election database **144**.

[0087] In some embodiments, another of the access layer modules **401** can be a ballot software module **405**. Ballot software module **405** can be used to receive the ballots that are completed by voters. The ballot software module **405** can then be used to process the votes on the ballot.

[0088] In some embodiments, one of the access layer modules **401** can be a tabulator software module **406**. In some embodiments, tabulator software module **406** appropriately buckets each vote received to the receiving candidate. The tabulator software module **406** ensures each vote that is recorded is counted properly and can summarize the votes received by various categories. In some embodiments, tabulator software module **406** can be used to record all of the votes from all of the received ballots and the get a total count of the vote for each candidate.

[0089] In some embodiments, another of access layer modules **401** can be a miscellaneous software module **407**. In some embodiments, miscellaneous software module **407** can be used to perform functions to verify the blockchain. For example, miscellaneous software module **407** can be used to verify the hash of the various blocks on the blockchain and verify the signatures on the transactions of the blockchain ledger.

[0090] As described above, the numerous software operations performed by the blockchain powered vote by mail software rely on numerous types of data to be stored in the system. As explained above, in some embodiments, this data is stored in the various databases **150**. In some embodiments, a portion of this data is stored directly on the blockchain itself. In some embodiments, it is advantageous to store limited information on the blockchain so that the blockchain can be used to confirm the validity of the election, while preventing others from determining exactly who voted for who in the election. Table 1 shows examples of what can be stored on and off the blockchain for the various software modules and objects discussed above. In some embodiments, off blockchain access is stored either in databases **150** or in voter registry database **142**, received ballots database **143**, or state/county election database **144**.

TABLE 1

Software Object Or Module	Off Chain	On Chain
Ballot Template 404	Ballot ID	Ballot Template ID
	Election ID	ElectionID
	State	State
	County	County
	Details of Candidates,	Hash Of Off Chain
	Open Positions, and	Ballot Template
	Ballot Initiatives	Registrar
	Date Issued	Time Stamp
	Registrar ID	Validity From-To
		Candidate Name
		Candidate Address
Ballot 405	Voter Tokenized ID	Hash (VoterID)
	ElectionID	ElectionID
	State	Token
	County	Status = 1
	Votes	Hash Of Submitted
	Submission Time	Ballot
	Signature	Signature
Accumulator 209	N/A	Election
		Position
		Candidate
		Count
VSO 201	Unique User	Unique User
	Identifier	Identifier
	Absentee Request	Status (Ballot
	Name	Request Or Voted)
	Address (Permanent)	Reference to Off
	Address (Current)	Chain Record
	Voting Jurisdiction	Hash of Absentee
	Requested	Request Application
	(State/County)	
	Contact Information	
	Telephone	
	Email	
	Absentee Voting	
	Request Date	
Vault 153	Hash (VoterID)	N/A
	Token (encrypted)	
	Election (Token	